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ABSTRACT

The performance of two developmentally delayed Down's Syndrome children on the Uzgiris-Hunt Scales (UHS) of psychological development is discussed in detail to illustrate the applicability of the scales to developmentally delayed children. This work was carried out at the Garden Park School for trainable and multiple-handicapped children in Phoenix, Arizona. The children at the school, ranging in chronological age from 2 to 5 years, are seen two mornings a week for two hours. The UHS is theoretically based on Jean Piaget's proposition that simple, easily observed behavioral interactions in the human infant and young child reveal development, consolidation, and elaboration of cognitive structures. The UHS consists of a specified number of tasks in each of six scales. Each scale reveals an invariant sequence of developmental attainments. Researchers have demonstrated a relationship between performance on the Scales and adaptive behavior in young, developmentally disabled children. Administration of the scales with developmentally delayed children is best aided by the use of videotape replay and is best conducted by a teacher familiar with the children. The performance of the two Down's Syndrome children, recommendations for classroom follow-up of these children, and interpretations of Scales I, II, and III are discussed. (Author/SS)

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Piaget-based Evaluation and Education of Young, Developmentally Delayed Children

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Abstract

The theoretical background of the Uzgiris-Hunt Scales of psychological development is described together with the unique applicability of the Scales for young, developmentally delayed children in an educational setting. Details of assessment, child performance, interpretations of the meaning of several of the Scales, and classroom follow-up are discussed.

Piaget-based Evaluation and Education of Young, Developmentally Delayed Children*

There is current evidence to suggest that children with developmental delay benefit from cognitive intervention related to the earliest developmental stages (Inhelder, 1968; Stephens, 1966; Wachs & DeRemer, 1978; Webb, 1969). Hunt (1961) discussed the fact that change in intellectual structures is most rapid during the early months and years in all children and that the effects of environmental encounters at that period are, in all likelihood, more effective than those experienced later. If children with multiple handicaps are to be included in a remedial developmental program at a young age, a practice that is becoming common in many areas, two issues appear to be critical. One has to do with the selection of assessment instruments which will be sufficiently descriptive to provide practical information about the individual child's level of functioning and needs. A second issue has to do with identification and adaptation of a theoretical framework within which an educational program can be designed appropriately for individual children.

This paper will address itself to the nature of the ordinal scales of psychological development formulated by Uzgiris and Hunt (1975) and its applicability for young, developmentally delayed children. A summary of the performance of two children on several of the Scales will be included as illustrative. The report will also interpret practical meaning of results obtained on the Scales and how components of an educational program can be utilized to further the child's mental growth. The work

reported here was carried on at the Garden Park School for trainable and multiple-handicapped children, Washington School District Number 6, Phoenix, Arizona.

Educational Setting

Organization of the Program

The developmentally delayed children in the Garden Park Program, ranging in chronological age from 2 to 5 years, are seen two mornings a week for two hours. There are from four to six children in the class, with a teacher and an assistant. A second teacher works with the parents, who individually observe and assist in the classroom on a rotating basis. Parents spend the remainder of the morning with other parents and the teacher discussing current attainment of each child and next goals. Educational activities are described which can be continued into home experiences. Achievements and efforts of the child at home are made known to the staff for consideration.

Teaching-Learning Components

The classroom program has several essential features: self-help, free-play and social interactions, and direct instruction. A primary component has to do with emphasis on self-help skills including toilet training, assistance with walking, dressing, feeding, and the like. Another component furnishes the children with generous free-play time during which children interact with each other, the teacher, and with the equipment. The equipment consists of a rich and varied assortment of

large and small wheel toys, and other manipulative objects such as large blocks, pull toys, stuffed animals, and the like. Favorites are the familiar objects and setting of the housekeeping corner, the loft with its popular ladder for ascents and descents, and the bikes, doll buggies, go-carts, and wagons.

A third essential component of the program has to do with regular, fairly structured, individual teaching sessions. Here all types of puzzles, form boards, stacking blocks, beads, and other manipulatives are selectively available for emphasis on the child's development of a number of skills. These sessions involve the child seated at a table with the teacher. Help is given in having the child follow directions, interact appropriately with objects, and complete a task. "All done," may be marked by the child's replacing equipment in appropriate containers and storing it in its assigned storage shelf. Improvement in the child's small, manipulative skills is emphasized. Praise by adults in this context of concrete experiences becomes one of the sources from which the child acquires praise of self. "Good work," or "good job," or clapping are means used to acknowledge the child's success or completion of a task. The child's learning to inhibit unacceptable behavior is also a part of each of these sessions as well as those mentioned above. When negative feedback is needed, it supplies specific information to the child as "no hitting," "no throwing," and other appropriate directions.

Assessment Issues

In the Garden Park program, results of the Bayley Scales of Infant Development, Mental Scale, Motor Scale, and the Infant Behavior Record were available on each child younger than 5-years-of-age admitted to the Preschool Program. These Scales have the advantage of yielding a mental and motor score which permit comparison with the standardization group. However, the Bayley Scales are limited in usefulness with retarded children since, first, there is an absence of a theoretical base other than reliance on use of items found to be roughly correlated with age. Secondly, the total score is based on a summation of success on individual items assigned equal weight, a feature that does not permit the formulation of a profile of a child's individual weaknesses and strengths on skills measured by the test. Since age correlations are inappropriate generally for children with developmental delay, it was decided in the local situation to supplement the Bayley results with use of the recently published Scales of Uzgiris and Hunt (1975).

The Ordinal Scales of Psychological Development

The theory base of these Scales is drawn from the work of Jean Piaget, noted Genevan epistemologist and psychologist, who maintains an interactionist, constructionist approach to the development of intelligence. Piaget (1963) proposes that simple, easily observed behavioral interactions in the human infant and young child reveal development, consolidation, and elaboration of cognitive structures. In other words, a child's interactions with objects and people indicate patterns of organization of knowledge. Uzgiris and Hunt (1975) explicate the Piagetian

rationale for the Scales. The authors describe the eliciting situations used in their assessment process, detail recording and scoring directions, and list the easily obtainable materials which are used.

The assessment consists of a specified number of tasks in each of the six Scales with a range of from 7 to 15 items practical for a teacher or evaluator to use. Each Scale reveals an invariant sequence of developmental attainments in children, such that the highest level or item on which a child is successful indicates mastery of all previous items in the Scale, and identifies the next step to which the child will progress. Because of the behavioral nature of the items as well as their hierarchical organization, each series provides operational information useful for both parents and teachers as an index to present level of functioning as well as a guide to promotion of growth.

The use of such Scales for severely and profoundly retarded children is not original with the present authors. Inhelder (1968), long-time associate of Piaget, and Stephens (1966) have each compared development of reasoning in retardates and normals, demonstrating that motor and manipulative behaviors reflect organization of central neural processes or thought processes. The two investigators have further shown that actions of children in response to Piaget tasks yield more information and useful data about children's reasoning than does the standard IQ score. Kahn (1976) applied the Uzgiris-Hunt Scales to severely and profoundly retarded children, ages 3 1/2 to 10 years chronologically with a mean age of 6 1/2. He demonstrated that the Scales could be used reliably and validly with such subjects. Most recently Wachs and DeRemer (1978) have demonstrated

a relationship between performance on the same Scales and adaptive behavior in young, developmentally disabled children.

Administration of the Scales

The assessment Scales are organized clearly, sequentially, and with sufficient information to make the task of determining a child's level one that a classroom teacher can undertake. However, when administering them to young children who are markedly delayed in development, certain problems are almost inevitable. The teacher who is familiar with the behaviors of these young children can appreciate the skill, patience, and occasional frustration in attempting to determine a child's level of functioning. If the assessment can be videotaped for replay and more careful observation, the same teacher can be pleasantly surprised and impressed with subtle behaviors which might have been missed in presenting the tasks, especially for the first time, to a new child in the program. One child, for instance, prior to performing the task required of placing a string of beads in a container, slipped them over her head indicating that she understood that beads "are to be worn," an indicator of a representational concept the teacher had not heretofore recognized that the child understood.

Familiarity of the teacher with the child, child with teacher, are also critical here. While this may be an obvious "given," it has not been regarded as such in the anals of objective testing. The fact that the examiner, in these Scales, is attempting to determine the highest or the optimal level that the child can achieve (and that an end-score is not a goal of the exercise, but rather a description of a child's functioning) underscores the importance of the familiarity between the teacher

and the child. If the teacher does use the Scales with a new child, it should be recognized that the evaluation is probably not as accurate a reflection of the child's abilities as if the teacher had worked with the child previously on a continuing basis.

That continuing basis often optimizes the child's orientation to assessment items which is conducive to dealing with problems and materials. Through daily instruction, children gradually acquire ability to attend, to deal with the starting and conclusion of a task, to relate to the teacher's expectations, and to recognize their own achievement.

Scale Performance, Interpretation, and Classroom Follow-up

All six Scales were administered to children when they entered the Garden Park program. This report will refer to two children, Nancy (2-1) and Jeannie (2-9) when first seen. Of the several children assessed, Nancy and Jeannie's responses will be used here to illustrate use of the Scales. They both had been diagnosed as Down's syndrome and had been considered developmentally delayed. Data were also available on them at the time of school entrance and from a follow-up ten months later. In the intervening ten-month period between the two examining experiences, Nancy and Jeannie had attended the preschool program described previously, and had also been enrolled in an infant stimulation effort.

For purposes of an introductory description which is the focus of this article, and because of space limitations, this report will also be confined to results obtained on Scales I, II, and III (A) and (B). Correlations between these Scales (I, II, and IIIB) were identified by

Uzgiris and Hunt (1975) as indicating a constellation possibly related to development of representation for motoric acts. Data on the other three Scales for Nancy and Jeannie are available from the authors.

Issues of independence or of relationships along the several branches of the Scales are discussed elsewhere. Piaget's (1962) stage theory would be predictive of fairly high correlations among the scores on the Scales, a fact corroborated by Uzgiris and Hunt with age as a variable. Patterns of cognitive development among the Scales are also considered specifically by Uzgiris (1973). Paraskevopoulos and Hunt (1971) discuss effects of differing conditions of rearing on the various Scales.

Scale I Performance

On Scale I, Development of Visual Pursuit and the Permanence of Objects (recognition that an object although out of sight was still present), Nancy (2-1) was beginning to show some primitive notions of object permanence, but she did not do this consistently, more frequently losing interest once an object had disappeared from her immediate field. At age 3-0 she completed successfully each of the 14 sequential steps demonstrating through searching for a hidden object under several covers the same order in which the container holding the desired object had been moved (from first cover to last cover). She also resorted to the reverse order (highest item in the series) starting to search where the container was seen last, then next to last, etc. The month of age which the majority of infants seen by the authors of the Scales achieved the highest step on Scale I was 1-9 to 1-10.

Jeannie (2-9), in contrast, did not evidence even the start of object permanence when first seen, usually hiding her head when confronted with each step or task on the Scale. At 3-7, however, she accomplished each of the tasks with assurance.

Interpretation of Scale I

A justifiable question by a teacher of retarded children might be (a) what does object permanence indicate, and (b) what are the ramifications for working with a young child who does not yet have this ability? The dependence of adults on the conceptual ability of object permanence is so obvious it rarely gets special attention. Mental retention of the location of a car left in a parking lot, or retention of the location of the car keys at home assume that the individual understands the permanence of the object even though it is not immediately visible. Ability to retrieve a book from a collection placed some months or years previously on a shelf is a common usage of object permanence in daily living. Uzgiris and Hunt see the attainment of this ability as a landmark of the first two years of life:

> Development along this sequence may be said to imply increasing persistence of representative central processes, increasing differentiation of central processes allowing for separation of the construction of objects from, first the action, and then the spatial contexts in which they are embedded, and increasing mobility of central processes leading up to representational thought. (1975, p. 108)

Classroom Follow-up

Children who have not yet achieved object permanence as measured by Scale I may be helped in a variety of ways. The teacher can simply follow the sequence indicated in the Scale as a guide to a variety of types of experiences that can be offered. First of all, the child needs to be exposed to interesting objects moved slowly about ten inches in from the child's eyes; then once the ability to follow the object has been established, an object can then be made to disappear below the surface on which the child is placed. Once the child has begun to search with his eyes to the point where the object has disappeared, the child can then be repeatedly exposed to a desired object which is partially covered, completely covered, and then covered by one of two screens. Sequential experiences involving more complex hiding rounds out the type of opportunities which will move the child along in the construction of object permanence.

In the Garden Park setting, children experience a variety of activities during free-play either providing practice that leads to object permanence or experiences in consolidating it. For example, a tier of shelves containing toys children can reach is an unending source of repeated hide-and-seek. Curtain pulled aside . . . "Now it's here," curtain dropped, "Now it's gone." The same curtain becomes adapted to peek-a-boo ("I'm here. Now I'm not here."). In the individual sessions, the manipulative materials, along with their varied uses--stacking, fitting into forms, bending, stretching, etc.--are hidden and retrieved either under screens or covers, or spatially in locations different from where the child is sitting.

Scale II Performance

On Scale II, The Means for Obtaining Desired Environmental Events, Nancy (2-1), in actions designed to cause events or obtain objects which she had come to desire, was able to differentiate means and ends in such ways as letting go of one object in order to reach for another, or to move to regain an object that had been removed. At 3-0 she completed all tasks of the Scale such as using a stick to obtain an object out of immediate reach, placing a necklace with ease in a cup (after first slipping it over her head to wear) and readily distinguishing a cylinder without a hole as not useful for stacking on a pole. The age at which the majority of children seen by Uzgiris and Hunt achieved the highest step was 1-10 years-of-age.

Jeannie (2-9), showed little interest in these tasks, usually putting her head down on the table. At 3-7 she completed all tasks except that designated as Foresightful Problem Solving which involved placing a long necklace of shiny beads in a tall, narrow container. (The problem is created by the length of a necklace and the unsteadiness of the container due to its dimensions.) She did, however, show interesting responses on tasks such as moving to retrieve an object out of reach, stacking cylinders on a pole (and without looking, carefully sliding the cylinder that did not have a hole [and could not be placed on the pole] off the table and on to the floor).

Interpretation of Scale II

There are several significant progressions occurring in behaviors measured by Scale II, many of them familiar to those involved in studying infant development. Eye-hand coordination which involves hand-watching behaviors and visually directed grasping are first. The development of differentiation of means and ends is more directly related to Piagetian theory in which the child becomes able to repeat an action which happens by chance at first, but then becomes incorporated as an action which will result in an interesting result. For instance, the child accidentally hits a rattle producing a sound he or she likes, then with repeated accidental encounters, moves to an intentional directed action to obtain the sound he/she likes. A third progression deals with the child's growing ability to understand the use of objects as means, that is, if a desired object is out of reach, but is on a support as a pillow, the pillow becomes the means to bring the object closer to the child. Similarly, a stick or string can be used to obtain the desired object and the child grasps the notion that the "appendage" is the means to the desired end, where formerly, he or she might have become involved in the stick or string and not seen its relationship to the desired object. Finally, in this group of actions on Scale II, there is the growth of foresight, the ability to figure out in advance that a necklace has to be rolled up before it can be inserted into the container, or that a cylinder can only be stacked on a ring if the cylinder has a hole.

Classroom Follow-up

Children who are not yet able to rely on means for obtaining desired ends as suggested by the above progressions need continued experiences with objects. First, eye-hand coordinations which occur spontaneously should be encouraged and opportunity for repeated experiences provided. Free-play periods where the teacher observes any such actions are invaluable for reinforcement. Any such action which occurs coincidentally and begins to be repeated with some apparent intentionality offer good opportunity for encouraging repeated experience. Then, any action which provides a child with involvement in an auxiliary means--as strings that pull an object closer, a stick that moves an object within reach; a pillow, block, or pan that, when pulled, brings an object into reach--all help a child to begin to differentiate means for achieving an action from the result desired. Similarly, any involvement with anticipating in advance what may happen and taking appropriate action is to be offered and encouraged. The first time the child searches for the string in order to pull the toy train is a significant happening just as his or her pulling over a chair to climb on it in order to reach an item that was too high otherwise. In the program the loft is a special source of primitive means-ends. The child above in the loft tosses a pillow down, receives it when the teacher tosses it back, and repeats the actions. Here the child comes to see his/her actions as instigating the fall of the pillow, the teacher's action in returning the pillow, an important distinction between means-ends thus being constructed mentally by the child, "I toss down," "You toss back."

In individual sessions there is slow progression from such activities as the child's seeing the teacher turn the key to make the toy duck waddle to the child's grasp of the fact that he can do this, also . . . and that it is the action (means) of turning the key that makes the duck waddle (end result).

Scale III Performance

On Scale III, Development of Imitation, Vocal (A) and Gestural (B), Nancy at 2-1 reproduced some sound patterns in imitation, but lost interest quickly in any gestural imitation, either those already in her repertoire or unfamiliar gestures. At 3-0, in contrast, she imitated all sound and gestural patterns with ease. The age at which the majority of the children seen by the original investigators attained the highest steps in this Scale ranged between 1-2 and 1-8. Jeannie at 2-9 imitated sound patterns only. At 3-7 she imitated some sound patterns, watched the examiner's lips on familiar words, and would sometimes mouthe the sounds, but not repeat them audibly. However, she copied all gestural steps on the Scale, a special ability in some Down's children.

Interpretation of Scale III

An important contribution of this Scale reveals that children initially imitate only the simple sounds and gestures already within their repertoire. Later children become able to repeat more complex words, short phrases, novel gestures if these bear some resemblance to earlier events.

In educational practice, the significance of Scale III shifts the focus of learning from the adult's behavior as the model to the child as

the model. It is the child's behaviors, attempts, vocalizations, which not only suggest present level of development, but also become the basis for consolidation, extension, and elaboration through imitation, a process of successive differentiation.

Classroom Follow-up

Implications for guidance with respect to imitation suggest incorporation of the above ideas, namely emphasizing imitation by the child of sounds and gestures that he or she already produces and uses spontaneously. Familiar schemes are then gradually incorporated into more complex and unfamiliar schemes which contain elements the child already has command of and extends them.

Jeannie used a repetitive gesture of hands over her head to indicate sometimes that she was finished, or that she didn't know. Among the phrases she first acquired, "All done" was based on that gesture which she later dropped when she could substitute the words.

Other early language imitation in the Garden Park setting was closely related to familiar, repetitive daily ~~actions~~ vocalizations and gestures. "Juice," "Thank you," and "All gone," were related to actions at snack time. "Good job," "Big boy," and "All done," were a part of individual teaching sessions. "On," and "Off," developed out of the child's use of the record player, the light swtich, and the water faucet. "Come," "Get it," "Up," and "Down," were phrases associated with desirable actions such as obtaining a toy, ascent and descent to and from the loft, and pillows tossed up and down while playing in the loft. "Bye bye," and "No no," are probably among the most familiar of all imitative potentials--vocal and gestural--which become successively differentiated.

In summary, this paper has attempted to illustrate the usefulness of the Scales devised by Uzgiris and Hunt to describe the psychological development of children with developmental delay, and to point out how the sequence in each of the Scales offers an approach for assisting developmentally delayed children to move through the progression that marks the usual attainments of normally developing children during the first two years of life.

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Footnotes

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